

Appl. No. 10/711,343  
Amdt. dated April 24, 2006  
Reply to Office action of February 23, 2006

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

5 **Listing of Claims:**

Claim 1 (currently amended): A liquid crystal display device comprising:

a liquid crystal display panel;

a light source for providing light beams to irradiate the liquid crystal display panel;  
and

10 an optical sheet positioned between the liquid crystal display panel and the light source and having a first surface facing the light source, the first surface having a plurality of prisms for totally reflecting portions of ambient light beams that have passed through the liquid crystal display panel to irradiate the liquid crystal display panel, each of the prisms comprising a first plane and a  
15 second plane, the included angle between the first plane and the second plane being in the range between 80° and 130°.

Claim 2 (original): The liquid crystal display device of claim 1 wherein each of the prisms is a symmetric structure or an asymmetric structure.

20

Claim 3 (canceled).

Claim 4 (currently amended): The liquid crystal display device of claim 1 ~~claim 3~~ wherein the optical sheet comprises a second surface facing the liquid crystal display  
25 panel.

Claim 5 (original): The liquid crystal display device of claim 4 wherein a is an included

Appl. No. 10/711,343  
Amdt. dated April 24, 2006  
Reply to Office action of February 23, 2006

angle between a normal of the second surface and the first plane of each prism, and  $a = 90^\circ - \sin^{-1}(n_1 \sin(b)/n_2) - c$ , wherein  $b$  is an incident angle of the ambient light beams when the ambient light beams are incident on the second surface of the optical sheet,  $c = \sin^{-1}(n_1/n_2)$ ,  $n_1$  is a refractive index of an ambient environment, and  $n_2$  is a refractive index of the optical sheet.

Claim 6 (original): The liquid crystal display device of claim 5 wherein  $b$  is less than or equal to  $60^\circ$ .

10 Claim 7 (original): The liquid crystal display device of claim 5 wherein  $d$  is an included angle between the normal of the second surface and the second plane of each prism, and  $d = 45^\circ + [\sin^{-1}(n_1 \sin(f)/n_2) - a + c]/2$ , wherein  $f$  is a refraction angle of the ambient light beams when the ambient light beams leave the second surface of the optical sheet.

15 Claim 8 (original): The liquid crystal display device of claim 7 wherein  $f$  is less than or equal to  $60^\circ$ .

Claim 9 (original): The liquid crystal display device of claim 1 wherein the optical sheet is a diffusing sheet.

20

Claim 10 (original): The liquid crystal display device of claim 9 wherein the optical sheet comprises polycarbonate (PC), polyethylene terephthalate (PET) or polymethyl methacrylate (PMMA).

25 Claim 11 (original): The liquid crystal display device of claim 1 wherein the optical sheet is a polarizer.

Appl. No. 10/711,343  
Amdt. dated April 24, 2006  
Reply to Office action of February 23, 2006

Claim 12 (currently amended): A liquid crystal display device comprising:

a liquid crystal display panel; and

an optical sheet having a first surface facing the liquid crystal display panel and a second surface opposed to the first surface, the second surface comprising a plurality of prisms being a rough surface for totally reflecting portions of ambient light beams that have passed through the liquid crystal display panel to irradiate the liquid crystal display panel, each of the prisms comprising a first plane and a second plane, the included angle between the first plane and the second plane being in the range between 80° and 130°.

Claim 13 (canceled).

Claim 14 (currently amended): The liquid crystal display device of claim 12 ~~claim 13~~ wherein each of the prisms is a symmetric structure or an asymmetric structure.

Claim 15 (canceled).

Claim 16 (currently amended): The liquid crystal display device of claim 12 ~~claim 15~~ wherein  $\alpha$  is an included angle between a normal of the first surface and the first plane of each prism, and  $\alpha = 90^\circ - \sin^{-1}(n_1 \cdot \sin(b)/n_2) - c$ , wherein  $b$  is an incident angle of the ambient light beams when the ambient light beams are incident on the first surface,  $c = \sin^{-1}(n_1/n_2)$ ,  $n_1$  is a refractive index of an ambient environment, and  $n_2$  is a refractive index of the optical sheet.

Claim 17 (original): The liquid crystal display device of claim 16 wherein  $b$  is less than or equal to 60°.

Appl. No. 10/711,343  
Amdt. dated April 24, 2006  
Reply to Office action of February 23, 2006

Claim 18 (original): liquid crystal display device of claim 16 wherein  $d$  is an included angle between the normal of the first surface and the second plane of each prism, and  $d = 45^\circ + [\sin^{-1}(n_1 \sin(f)/n_2) - a + c]/2$ , wherein  $f$  is a refraction angle of the ambient light beams when the ambient light beams leave the first surface of the optical sheet.

5

Claim 19 (original): The liquid crystal display device of claim 18 wherein  $f$  is less than or equal to  $60^\circ$ .

10 Claim 20 (original): The liquid crystal display device of claim 12 wherein the optical sheet is a diffusing sheet.

Claim 21 (original): The liquid crystal display device of claim 20 wherein the optical sheet comprises polycarbonate, polyethylene terephthalate or polymethyl methacrylate.

15 Claim 22 (original): The liquid crystal display device of claim 12 wherein the optical sheet is a polarizer.

20 Claim 23 (original): The liquid crystal display device of claim 12 further comprising a light source for providing light beams to irradiate the liquid crystal display panel, and the optical sheet being positioned between the liquid crystal display panel and the light source.